

SECTION 5

305(b) CONTENTS — PART IV: GROUND WATER ASSESSMENT

Section 106(e) of the Clean Water Act requests that each State monitor the quality of its ground water resources and report the status to Congress every two years in its State 305(b) report. To provide guidance in preparing the 305(b) reports, EPA worked with States to develop a comprehensive approach to assess ground water quality that takes into account the complex spatial variations in aquifer systems, the differing levels of sophistication among State programs, and the expense of collecting ambient ground water data. This approach incorporates all of the components requested during previous 305(b) reporting periods.

Using guidelines established by EPA, early State 305(b) reports presented an overview of the State resource manager's perspective on ground-water quality based on monitoring of known or suspected contamination sites and on finished-water quality data from public water supply systems (PWS). These data did not always provide a complete and accurate representation of ambient ground water quality (i.e., background or baseline water quality conditions of an aquifer or hydrogeologic setting). Neither did these data provide an indication of the extent and severity of ground water contaminant problems. Finally, the broad-brushed approach used in past 305(b) reports to define ground water quality for the entire State did not allow States to develop and report more detailed results for locations of greatest ground water use and vulnerability.

In the 1996 *Guidelines*, EPA encouraged States to assess ground water quality for selected aquifers or hydrogeologic settings within the State or portions of aquifers or hydrogeologic settings that reflect State ground water management priorities. The assessment of ground water quality within specific aquifers or hydrogeologic units provided for a more meaningful interpretation of ground water quality within the State. It also enabled States to report results for locations of special interest.

Using the 1996 *Guidelines*, States achieved improved reporting on ground water quality within the 305(b) program. Several States noted that the 1996 *Guidelines* provided incentive to modify their ground water programs to enhance their ability to provide more accurate and

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representative information. Recognizing this progress, EPA is working with States to maintain the established continuity and momentum in assessing the quality of our Nation's ground water. As part of this effort, EPA is continuing to request that States assess ground water quality for selected aquifers or hydrogeologic settings.

EPA recognizes that assessment of the entire State's ground water resources on an aquifer-specific basis is a monumental task. To ease the burden, EPA suggested in the 1996 *Guidelines* that ground water quality be assessed within selected aquifers and/or hydrogeologic settings incrementally over a period of ten years. For 1998, States are encouraged to set a priority for reporting results for areas of greatest ground water demand and vulnerability. If States so choose, they may focus their beginning assessments to well-defined areas such as wellhead protection areas. States are encouraged to provide short narratives describing how aquifers or hydrogeologic settings were selected for assessment. States will be encouraged to expand their ground water assessment efforts to include additional aquifers and/or hydrogeologic settings each subsequent reporting period. In this way, an increasingly greater area of the State will be assessed. EPA encourages States to set a goal of fully assessing ground water quality within most of the State (approximately 75 percent of the State) by the year 2006.

EPA recognizes that data collection and organization varies among the States, and that a single data source for assessing ground water quality does not exist for purposes of the 1998 305(b) reports. EPA encourages States to **use available data** that they believe best reflect the quality of the resource. However, for most States to obtain the data generally required to provide an accurate and representative assessment of ground water quality cooperation between multiple State agencies may be necessary. Although EPA recognizes and acknowledges the difficulty in obtaining data across agency boundaries, coordination in data collection and management efforts between State agencies is in most cases highly important. EPA encourages State water protection programs to begin coordination of data collection and management efforts for ease of reporting, to provide an opportunity for greater quality control, and to reduce inconsistencies in reported data.

States may choose to use one or multiple sources of data in the assessment of ground water quality. Several potential data sources have been identified, including:

C Ambient water quality data from dedicated monitoring well networks ,

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- C Untreated or finished water quality data from ground-water-based public water supply wells,
- C Untreated or finished water quality data from private or unregulated wells.

In the absence of a dedicated ground water monitoring network, States may choose to use data collected from Public Water Supply Systems (PWSSs) in the assessment of ground water quality. These data are routinely collected by the States under the Safe Drinking Water Act and would not necessitate a separate and unique monitoring effort for purposes of the 1998 305(b) reporting process. Furthermore, drinking water criteria have been applied to the characterization of ground water in other areas of study, and national drinking water standards have been established and can be readily incorporated into the 305(b) framework providing a basis for national comparison. States that have access to other data sources that can be used to assess ground water quality are encouraged to use them if, in the judgment of the ground water professionals, the data have undergone sufficient quality assurance/quality control checks.

In addition to introducing the assessment of ground water quality within selected aquifers or hydrogeologic settings in the 1996 *Guidelines*, EPA encouraged States to provide information on ground water-surface water interactions, thus reflecting the growing awareness of water resource managers on the importance of ground water-surface water interactions and their contribution to water quality problems. Recognizing that many of the problems related to ground water-surface water interactions are difficult to study and that limited data exist, EPA made reporting information on this subject optional for 1996. EPA will continue to request this information, but it will remain optional.

EPA and States represented on the 305(b) Ground Water Focus Group, which consists of interested State and EPA personnel, discussed the issues involved in revision of these *Guidelines*. In general, these guidelines present four Tables designed to direct States in reporting on the quality of their ground water resources. An overview of the most important sources of ground water contamination and the associated contaminants impacting ground water quality is requested along with a summary of the State's ground water protection efforts (Tables 5-1 and 5-2, respectively). Ground water quality of specific aquifers or hydrogeologic units as it relates to contaminant sources and the occurrence of particular groups of contaminants is also requested (Tables 5-3 and 5-4, respectively).

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All four of the Tables presented herein were requested in the 1996 *Guidelines*. The most significant change to these current guidelines is the re-ordering of the Tables into general and aquifer-specific categories and the deletion of a table that focused on ground water-surface water interactions with a request for a narrative rather than tabulated analytical data. As previously stated, reporting information on ground water-surface water interactions will remain optional for 1998. For Tables 5-1 through 5-4, States are encouraged to provide a short narrative explaining the methodology used to complete the tables as well as the data type and reporting interval used in the assessment.

EPA and the 305(b) Ground Water Focus Group recognize and fully accept that there will be significant variability in the information that States will be able to provide in the 1998 305(b) reporting cycle. However, EPA expects that the direction of future reporting cycles will be evident, and that States will begin to develop plans and mechanisms to compile, organize, and evaluate the requested information for future reporting cycles.

Overview of Ground Water Contamination Sources

In previous 305(b) reports, States were asked to identify the contaminant sources and contaminants impacting their ground water resources. EPA will continue to ask for this information in Table 5-1.

Table 5-1 requests information for contaminant sources within the State that are the greatest threat to ground water quality. EPA developed Table 5-1 as a guide to States in reporting the major sources of contamination that threaten their ground water resources. The contaminant sources presented in Table 5-1 are based on information provided by States during previous 305(b) reporting periods. Using this list, States are encouraged to check the ten highest-priority sources of ground water contamination. It is not necessary to individually rank the contaminant sources; however, the factors considered in selection should be included in the column provided. In addition, the major contaminants originating from each of the sources should be specified in the column provided. The list is not meant to be comprehensive and States are encouraged to identify additional sources that are unique to them or distinct from EPA's conventional use of terminology. States are encouraged to use the most detailed and reliable information available to them.

Table 5-1 should be included in State 305(b) reports. Instructions for completion of this table follow the table.

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Table 5-1. Major Sources of Ground Water Contamination

Contaminant Source	Ten Highest-Priority Sources (T) ⁽¹⁾	Factors Considered in Selecting a Contaminant Source ⁽²⁾	Contaminants ⁽³⁾
<i>Agricultural Activities</i>			
Agricultural chemical facilities			
Animal feedlots			
Drainage wells			
Fertilizer applications			
Irrigation practices			
Pesticide applications			
On-farm agricultural mixing and loading procedures			
Land application of manure (unregulated)			
<i>Storage and Treatment Activities</i>			
Land application (regulated or permitted)			
Material stockpiles			
Storage tanks (above ground)			
Storage tanks (underground)			
Surface impoundments			
Waste piles			
Waste tailings			
<i>Disposal Activities</i>			
Deep injection wells			
Landfills			
Septic systems			
Shallow injection wells			
<i>Other</i>			
Hazardous waste generators			
Hazardous waste sites			
Large industrial facilities			
Material transfer operations			
Mining and mine drainage			
Pipelines and sewer lines			
Salt storage and road salting			
Salt water intrusion			
Spills			
Transportation of materials			
Urban runoff			
Small-scale manufacturing and repair shops			

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Other sources (please specify)			
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Instructions/Notes for Table 5-1

1. Indicate by a check (T) up to ten contaminant sources identified as highest priority in your State. Ranking is not necessary. Provide a narrative describing the methodology used to complete this table and the justification for prioritization of the sources indicated (e.g., professional judgement or actual data evaluation, etc.). If actual data are used, please describe the type of data used and the reporting interval.
 2. Specify the factor(s) used to select each of the contaminant sources. Denote the following factors by their corresponding letter (A through I) and list in order of importance. Describe any additional or special factors that are important within your State in the accompanying narrative.
 - A. Human health and/or environmental risk (toxicity)
 - B. Size of the population at risk
 - C. Location of the sources relative to drinking water sources
 - D. Number and/or size of contaminant sources
 - E. Hydrogeologic sensitivity
 - F. State findings, other findings
 - G. Documented from mandatory reporting
 - H. Geographic distribution/occurrence
 - I. Other criteria (please add or describe in the narrative)
 3. List the contaminants/classes of contaminants considered to be associated with each of the sources that was checked. Contaminants/contaminant classes should be selected based on data indicating that certain chemicals or classes of chemicals may be originating from an identified source. Denote contaminants/classes of contaminants by their corresponding letter (A through M).
 - A. Inorganic pesticides
 - B. Organic pesticides
 - C. Halogenated solvents
 - D. Petroleum compounds
 - E. Nitrate
 - F. Fluoride
 - G. Salinity/brine
 - H. Metals
 - I. Radionuclides
 - J. Bacteria
 - K. Protozoa
 - L. Viruses
 - M. Other (please add or describe in the narrative)
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Overview of State Ground Water Protection Programs

In previous 305(b) reports, States were asked to provide a narrative description of ground water protection programs. This information provided an overview of the legislation, statutes, rules, and/or regulations that were in place. It also provided an indication of how comprehensive ground water protection activities were in the State. EPA requested this same information in a table format in 1996 to more uniformly summarize and characterize the information provided. EPA is continuing to request each State to complete and submit this information in tabular form. Table 5-2 was developed to assist States. Instructions for completing Table 5-2 follow the table.

States are also encouraged to provide a narrative describing significant new developments in State ground water protection efforts and the implementation status of their ground water protection programs and activities. The narrative may include changes that have occurred since the last 305(b) reporting cycle that States wish to highlight, such as development of an aquifer classification system, development of ground water standards to protect against land use practices, or improved coordination between State agencies. The narrative may also include a discussion of programs that warrant further development and implementation. Specifically, what are the problems associated with a given program, what solutions have been identified, and what, if any, impediments exist to implementing the solutions.

If desired, States may also consider using non-direct indicators to illustrate new developments in ground water protection programs. For example, States may detail changes in pesticide usage, landfill design and remediation, or underground storage tank practices that led to the elimination of potential ground water pollution threats, or improvement of site conditions, or decreases in potential contaminant migration.

Each State is encouraged to provide examples of the successful application of the State's programs, regulations, or requirements; a description of a specific survey or major study; or some other activity that demonstrates the State's progress toward protecting the ground-water resources.

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Table 5-2. Summary of State Ground Water Protection Programs

Programs or Activities	Check (T) ⁽¹⁾	Implementation Status ⁽²⁾	Responsible State Agency ⁽³⁾
Active SARA Title III Program			
Ambient ground water monitoring system			
Aquifer vulnerability assessment			
Aquifer mapping			
Aquifer characterization			
Comprehensive data management system			
EPA-endorsed Core Comprehensive State Ground Water Protection Program (CSGWPP)			
Ground water discharge permits			
Ground water Best Management Practices			
Ground water legislation			
Ground water classification			
Ground water quality standards			
Interagency coordination for ground water protection initiatives			
Nonpoint source controls			
Pesticide State Management Plan			
Pollution Prevention Program			
Resource Conservation and Recovery Act (RCRA) Primacy			
Source Water Assessment Program ⁽⁴⁾			
State Superfund			
State RCRA Program incorporating more stringent requirements than RCRA Primacy			
State septic system regulations			
Underground storage tank installation requirements			
Underground Storage Tank Remediation Fund			
Underground Storage Tank Permit Program			
Underground Injection Control Program			
Vulnerability assessment for drinking water/wellhead protection			
Well abandonment regulations			
Wellhead Protection Program (EPA-approved)			
Well installation regulations			
Other programs or activities (please specify)			

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Instructions/Notes for Table 5-2

1. Place a check (T) in the appropriate column of Table 5-2 for all applicable State programs and activities.
2. Briefly indicate the implementation status for each of the programs. Terms that may be used to describe implementation status are "not applicable," "under development," "under revision," "fully established," "pending," or "continuing efforts." States may wish to describe and further explain the implementation status of special programs or activities and the terms used in completing Table 5-2 in the accompanying narrative.
3. Indicate the State agency, bureau, or department responsible for implementation and enforcement of the program or activity. If multiple agencies are involved in the implementation and enforcement of a program or activity, provide the lead agency followed by an asterisk (*) to indicate involvement of multiple agencies.
4. In the accompanying narrative, include the number (and/or percentage) of community public water supply systems with source water protection programs in place. Include the population served by these systems, if the information is available. Also, identify the agency responsible for making assessment information available to the public.

Summary of Ground Water Contamination Sources

For the first time in 1996, EPA began requesting that States assess ground water quality for selected aquifers or hydrogeologic settings. EPA developed two tables (herein referred to as Tables 5-3 and 5-4) that provide States with a format for reporting this information. EPA is continuing to request that States complete these two tables to the degree that their resources permit.

EPA worked with States to develop Table 5-3 (Summary of Ground Water Contaminant Sources) as a means of assessing the stress on individual aquifers or hydrogeologic settings within the State. Specifically, States are encouraged to use Table 5-3 to report information on the type and number of potential contaminant sources within the reporting area. If desired, Table 5-3 may also be used to indicate the status of actions being taken to address ground water contaminant problems. This latter information is optional and it is left up to the discretion of the State as to whether they want to report it.

Table 5-3 should be included in State 305(b) reports. Instructions follow the table. A short narrative describing the methodology used to complete this table should also be included.

See end of this file for Table 5-3

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Instructions/Notes for Table 5-3

1. Identify the aquifer and hydrogeologic setting by describing the unit in as much detail as necessary to distinguish it from other aquifers in the State. The description needs to be sufficient to enable tracking from one reporting period to another. Some potential descriptors to consider may be the name, location, lithology, and depth to the top and bottom of the aquifer. If desired, States may append a map illustrating the general location of the selected aquifer or hydrogeologic setting.
2. Indicate, if desired, a spatial description of the aquifer or hydrogeologic setting that can be used to fix the general location of the aquifer or hydrogeologic setting on a map. States may opt to supply this information using whatever method is most appropriate. For example, States may choose to supply a rough map or longitude/latitude information. If States supply longitude/latitude information, they may present this information for the approximate middle of the aquifer or for four points around the aquifer such that the general two-dimensional location of the aquifer could be determined. They should use a good quality base map (such as a U.S. Geological Survey Quad Sheet) to obtain the longitudes and latitudes.
3. Indicate, if desired, if the spatial information exists in a digital format and can be provided in map form. States are encouraged to provide maps, if possible.
4. Record the reporting period. For purposes of this table, it is assumed that the data were collected over a single time frame. If this is not the case, please indicate in a note at the bottom of the table the appropriate time frames for each data source.
5. Note that potential source types may include point sources as well as non-point sources. Potential non-point source types that States may consider include agricultural sites, septic systems, industrial contamination of unknown origin, and/or wastewater treatment plant discharges.
6. Indicate the total number of sites in each of the categories listed in Table 5-3. If the exact number of sites is not known, States are encouraged to estimate the numbers of sites. Note that in some cases, the information requested is optional and need not be entered.
7. Indicate the contaminants of concern that have impacted ground water quality. It is not necessary to list every contaminant that has been detected. Instead, States are encouraged to list the contaminants of primary concern.

Summary of Ground Water Quality

EPA encouraged States to provide a description of overall ground water quality in previous 305(b) reports. Due to the expense involved in collecting ambient ground water monitoring data, a comprehensive evaluation of the resource was not possible and States generally described ground water quality as ranging from "poor" to "excellent." Although these descriptors were based on best available information, they did not provide an accurate representation of ground water quality and it became evident that a series of indicator parameters were necessary to characterize spatial and temporal trends in ground water quality.

Ground water indicators have been under development for some time, with each succeeding 305(b) reporting period advancing development one step further. The 1994 305(b) reporting period focused on the use of maximum contaminant level (MCL) exceedances in ground-water-based or partial-ground-water supplied PWSs. The 1996 305(b) reporting period continued to use MCL exceedances in ground-water-based PWS, but also allowed the option to use other data that may be available to States. The data used in the assessment was combined with a spatial component (i.e., aquifer or hydrogeologic setting) to allow States to report information for locations of special interest (e.g., critical ground water usage, high vulnerability, or special case studies).

Beginning in 1996, States were encouraged to select specific aquifers or hydrogeologic settings for ground water assessment based on data availability and State-specific priorities. States were encouraged to review the types of monitoring data that were available (e.g., PWS, ambient and/or compliance monitoring data), how much data was available, the quality of the data (e.g., confirmed MCL exceedances), and whether the data could be correlated to a specific aquifer or hydrogeologic setting. If data could be correlated to specific aquifers or hydrogeologic settings, States were asked to consider giving priority to aquifers or hydrogeologic settings that support significant drinking water supplies and/or were sensitive to land use practices. If data could not be correlated to specific aquifers or hydrogeologic settings, States were asked to consider developing plans and mechanisms to report the information in future 305(b) reporting cycles. EPA recognized that reporting data for specific aquifers or hydrogeologic settings within States was new and that there would be significant variability in the information that States were able to provide in 1996. To ease the burden, EPA suggested that States assess ground water quality within specific aquifers or hydrogeologic settings with a goal of assessing

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approximately 75 percent of the State during a ten-year period. For purposes of the 1998 305(b) report, EPA is encouraging States to continue to assess ground water quality for specific aquifers or hydrogeologic settings such that the goal is achieved by the year 2006.

As noted earlier, EPA recognizes that a single data source for assessing ground water quality does not exist and States are encouraged to use available data that they believe best reflects the quality of the resource. States may choose to use one or multiple sources of data in the assessment of ground water quality. Several potential data sources have been identified, including:

- C Ambient water quality data from dedicated monitoring wells or networks (optional),
- C Untreated or finished water quality data from ground-water-based public water supply wells,
- C Untreated or finished water quality data from private or unregulated wells (optional).

The source water assessments required under the 1996 Amendments to the Safe Drinking Water Act should be a very important data source for assessing ground water quality. These assessments, as outlined in EPA's August 1997 guidance, require that States complete source water delineations and source inventory/susceptibility analyses for the public water supplies in the State within two years after EPA approval of the program. These source water protection areas for ground-water based systems are synonymous with "Wellhead Protection Areas" as defined in Section 1428(3).

The exact source(s) of data used by the States to assess ground water quality will depend upon data availability and the judgment of ground water professionals. In the absence of dedicated ground water monitoring wells or networks, States may consider using data collected from PWS as these data are routinely collected under SDWA and would not necessitate a separate and unique monitoring effort. If States have access to other data sources, they are encouraged to use whatever is appropriate. For example, monitoring data from ambient wells at regulated sites may also be used. States are encouraged to report any occurrences, including MCL exceedances, of the parameters in the classes or categories to obtain a more comprehensive understanding of groundwater quality and contamination.

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Table 5-4 was developed as a guide to States to report ground water quality based on data collected from well networks. The primary basis for assessing ground water quality is the comparison of chemical concentrations in water collected from these wells to water quality standards. For purposes of this comparison, EPA encourages States to use the maximum contaminant levels defined under SDWA. However, if State-specific water quality standards exist, and constituent concentrations are at least as stringent as the maximum contaminant levels defined under SDWA, State-specific water quality criteria may be used for assessment purposes. States are encouraged to append the State ambient water quality criteria used to assess ground water quality in their 305(b) reports.

Depending upon the results of the comparison, the data are summarized into four parameter groups and entered in one of the columns on Table 5-4 (more explicit instructions follow the table). These groups include volatile organic compounds (VOCs), semi-volatile organic compounds (SOCs), nitrates (NO_3), and other constituents. Nitrate is emphasized because of its widespread use, persistence, and relatively high mobility in the environment. Pesticides may also be emphasized under SOCs if a State so desires. Other constituents that States may wish to consider are the indicator parameters developed by the Intergovernmental Task Force for Monitoring Water Quality (ITFM) for monitoring in areas with different types of land uses and sources of contaminants (*An Approach for a National Ground-Water Quality Monitoring Strategy*, U.S.G.S., Open File Report, 1996).

The secondary basis for assessment is natural sensitivity of the aquifer and/or vulnerability to land-use practices.¹ This information may be reported when monitoring data are scarce or nitrate analyses are the only data available. Information that may be considered by ground water professionals may include known or suspected land-use practices that threaten ground water quality (e.g., landfills, industrial facilities, pesticide applications), documented cases of ground water contamination, trends in the number of each cases, and actions being taken to address contamination. The exact information used and its interpretation is left to the judgment of the State ground water professionals.

The third basis for assessment is the additional information States may have available that relates to ground water quality. For example, the number of wells abandoned or deepened in response to ground water

¹State definitions of vulnerability and sensitivity should be consistent with State Management Plans (U.S. EPA, *Assessment, Prevention, Monitoring, and Response Components of State Management Plans, Appendix B*, Office of Prevention, Pesticides, and Toxic Substances, EPA 735-B-93-005c, February 1994).

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contamination is an indication of the degradation of the resource. In addition, although wells with elevated concentrations of naturally-occurring constituents are not necessarily a reflection of the degradation of the resource, they are included in Table 5-4 because they are important to recognize and address as part of water quality planning.

It is important to note that Table 5-4 was developed by EPA and States to (1) provide guidance to States in assessing ground water quality, (2) promote consistency among States in reporting information on ground water quality, and (3) provide a means to compare results reported by States on a National basis. EPA recognizes ground water management priorities and practices vary among the States and that there will be significant variation in the information that States are able to provide in Table 5-4.

Review of the information provided using Table 5-4 for the 1996 reporting cycle indicated that this was indeed the case. Although the majority of States completed Table 5-4, a variety of styles were used to present the data. The variety of styles was attributed more to the deficiency of some types of information rather than a States unwillingness to provide the information. Most frequently, information related to natural sensitivity or vulnerability to land-use practices and well closures/wells requiring special treatment were not provided. Most States provided information comparing analyte concentrations to water quality standards (MCLs). Depending upon State data availability, comparisons were made for individual samples, individual wells, or well networks. States reported information for counties, established ground water basins, hydrogeologic subareas, hydrogeologic regions, and Statewide areas. Another variation was reporting information for specific analytes or for groups of analytes.

EPA expected the variability seen in Table 5-4 and was encouraged at the progress made in 1996 in assessing ground water. EPA is continuing to use Table 5-4 to request information from States on an aquifer-specific basis. With time, it is hoped that more and more States will be able to provide increasingly more accurate and representative assessments.

The columns in Table 5-4 were not assigned any type of use-support designation for purposes of the 1996 305(b) reporting cycle. Furthermore, the information supplied by States in 1996 were not used to assess the quality of the aquifer or hydrogeologic setting as a whole, but were used to assess the quality of ground water collected from a monitoring point within the designated aquifer or hydrogeologic setting. These same ideas will be followed in the 1998 305(b) reporting cycle.

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See end of this file for Table 5-4

TABLE 5-4 (continued)

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Instructions/Notes for Table 5-4

1. Identify the aquifer and hydrogeologic setting by describing the unit in as much detail as necessary to distinguish it from other aquifers in the State. The description needs to be sufficient to enable tracking from one reporting period to another. Some potential descriptors to consider may be the name, location, lithology, and depth to the top and bottom of the aquifer. If desired, States may append a map illustrating the general location of the aquifer or hydrogeologic setting selected for this assessment.
2. Indicate, if desired, a spatial description of the aquifer or hydrogeologic setting that can be used to fix the general location of the aquifer or hydrogeologic setting on a map. States may opt to supply this information using whatever method is most appropriate. For example, States may choose to supply a rough map or longitude/latitude information. If States supply longitude/latitude information, they may present this information for the approximate middle of the aquifer or for four points around the aquifer such that the general two-dimensional location of the aquifer could be determined. They should use a good quality base map (such as a U.S. Geological Survey Quad Sheet) to obtain the longitudes and latitudes.
3. Indicate, if desired, if the spatial information exists in a digital format and can be provided in map form. States are encouraged to provide maps, if possible.
4. Record the reporting period. For purposes of this table, it is assumed that the data was collected over a single timeframe. If this is not the case, please indicate in a note at the bottom of the table, the appropriate timeframe for each data source.
5. For the type of monitoring data being used (e.g., untreated or finished water quality data from public water supply wells), indicate the total number of wells considered in this assessment. If PWS data are used in the assessment, it is important to note that constituents related to the operation and maintenance of PWS should not be considered in these assessments. Constituents should only be considered in Table 5-4 if they are known to be representative of the source water.
6. Report the total number of wells for which anthropogenic constituents are not detected at concentrations above the method detection limits (MDLs) and for which naturally-occurring constituents are consistent with background levels.
7. For wells that are located in either sensitive or vulnerable areas, report the total number for which anthropogenic constituents are not detected at concentrations above the method detection limits and for which naturally-occurring constituents are consistent with background levels.

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Instructions/Notes for Table 5-4 (continued)

8. Report the total number of wells for which nitrate concentrations range from background levels to less than or equal to 5 mg/L. Indicate the total number of wells for which other anthropogenic constituents are not detected at concentrations above the method detection limits and for which naturally-occurring constituents are consistent with background levels.
9. Indicate the number of wells that are located in either sensitive or vulnerable areas that have nitrate concentrations that typically range from background levels to less than or equal to 5 mg/l. Also for wells that are located in either sensitive or vulnerable areas, indicate the number of wells, report the total number for which anthropogenic constituents are not detected at concentrations above the method detection limits and for which naturally-occurring constituents are consistent with background levels.
10. Report the total number of wells for which nitrate is detected at concentrations that range from greater than 5 to less than or equal to 10 mg/l or for which anthropogenic constituents are detected at concentrations that exceed the method detection limits but are less than or equal to the MCLs.
11. Report the total number of wells for which concentrations of anthropogenic constituents are confirmed one or more times at levels exceeding the MCL.
12. Report the total number of wells that have been either temporarily or permanently abandoned or removed from service or deepened due to ground water contamination.
13. Report the total number of wells requiring additional or special treatment (e.g., Best Available Technologies, blending). Special treatments would include chlorination, fluoridation, aeration, iron removal, ion exchange and lime softening if these are necessary to remove contamination from the source water and not caused by the treatment or distribution system itself.
14. Report the total number of wells that have concentrations of naturally-occurring constituents that exceed MCLs.
15. Pesticide compounds should be included under the category of SOC's.
16. Other parameters that States may consider include metals, total dissolved solids, odor, turbidity, or indicators as developed by the ITFM.
17. Check the major use(s) of water from the aquifer or hydrogeologic unit and the use(s) that have been affected by water quality problems.

Summary of Ground Water-Surface Water Interactions

Nationwide, many water quality problems may be caused by ground water-surface water interactions. Substantial evidence shows it is not uncommon for contaminated ground water to discharge to and contaminate surface water. In other cases, contaminated surface water is seeping into and contaminating ground water.

Reflecting the growing awareness of ground water-surface water interactions and their contribution to water quality problems, EPA is asking States to provide information that may be used to assess impacts to water quality. Of course, EPA recognizes that many of the problems related to ground water-surface water interactions are difficult to study, and as a result, limited information is available. As a consequence, reporting information on this subject is optional for 1998.

However, if information is available, EPA asks States to report information on significant water quality problems resulting from ground water-surface water interactions.

States are encouraged to provide a narrative that describes the type and source of the contamination (e.g., land application of fertilizers, septic systems, salt-water intrusion, or animal waste-holding ponds); the primary land use in the vicinity of the source (e.g., agricultural, residential, industrial, undeveloped, etc); the aquifer(s) and surface water bodies impacted; the relative magnitude of the contamination (surface water versus ground water); a description of how the ground water-surface water interaction was determined; whether the contamination threatens drinking water availability or public health or is otherwise a source of concern; whether contamination is transitory or long-term; and any actions being taken to address the problem.

Conclusion

These *Guidelines* will assist States to fulfill the requirements of Section 106(e) of the Clean Water Act that requests that each State monitor the quality of its ground water resources and report the status to Congress in their State 305(b) reports. EPA worked with States represented on the 305(b) Ground Water Focus Group to develop this comprehensive approach to assessing ground water quality as applied on a national scale. The approach presented in these *Guidelines* is consistent with the approach taken in the previous 1996 reporting cycle.

5. 305(b) CONTENTS — PART IV: GROUND WATER ASSESSMENT

Ground water quality will continue to be assessed in specific aquifers or hydrogeologic settings selected by States. The assessment will be based on a series of indicator parameters, including the type and number of contamination sites within the reporting area, concentrations of anthropogenic and naturally-occurring constituents in the ground water as compared to National or State water quality standards, and information on natural sensitivity and/or aquifer vulnerability to land-use practices. EPA will continue to request States to consider groundwater-surface water interactions and their effects on water management practices.

EPA recognizes that there will be significant variability in the degree to which States are able to respond to the data requests in these guidelines; however, it is hoped that as States develop plans and mechanisms to meet these data requests, reporting will become more uniform. In 2006 , it is hoped that ground water quality will be characterized in the majority of each State. As databases develop over time, trends in ground water quality in States, Regions, and in the Nation will be evaluated as part of the 305(b) process.

Table 5-3. Ground Water Contamination Summary

Hydrogeologic Setting ⁽¹⁾ _____
 Spatial Description (optional) ⁽²⁾ _____
 Map Available (optional) ⁽³⁾ _____
 Data Reporting Period ⁽⁴⁾ _____

Source Type ⁽⁵⁾	Number of sites ⁽⁶⁾	Number of sites that are listed and/or have confirmed releases ⁽⁶⁾	Number of sites with confirmed ground water contamination ⁽⁶⁾	Contaminants ⁽⁷⁾	Number of site investigations (optional)	Number of sites that have been stabilized or have had the source removed (optional)	Number of sites with corrective action plans (optional)	Number of sites with active remediation (optional)	Number of sites with cleanup completed (optional)
NPL									
CERCLIS (non-NPL)									
DOD/DOE									
LUST									
RCRA Corrective Action									
Underground Injection									
State Sites									
Non-Point Sources ⁽⁵⁾									
Other (specify)									

NPL - National Priority List

CERCLIS (non-NPL) - Comprehensive Environmental Response, Compensation, and Liability Information System

DOE - Department of Energy

DOD - Department of Defense

LUST - Leaking Underground Storage Tanks

RCRA - Resource Conservation and Recovery Act

Table 5-4. Aquifer Monitoring Data

Hydrogeologic Setting ⁽¹⁾ _____
 Spatial Description (optional) ⁽²⁾ _____
 Map Available (optional) ⁽³⁾ _____
 Data Reporting Period ⁽⁴⁾ _____

[illegible]

Table 5-4. (continued)

Monitoring Data Type	Total No. of Wells Used in the Assessment ⁽⁵⁾	Parameter Groups	Number of Wells										
			No detections of parameters above MDLs or background levels		Nitrate concentrations range from background levels to less than or equal to 5 mg/l		Nitrate ranges from greater than 5 to less than or equal to 10 mg/l	Other parameters are detected at concentration s exceeding the MDL but are less than or equal to the MCLs ⁽¹⁰⁾	Parameters are detected at concentrations exceeding the MCLs ⁽¹¹⁾	Number of Wells Removed from service ⁽¹²⁾	Number of Wells Requiring Special Treatment ⁽¹³⁾	Background parameters exceed MCLs ⁽¹⁴⁾	
					No detections of parameters other than nitrate above MDLs or background levels and/or located in areas that are sensitive or vulnerable								
			ND ⁽⁶⁾	Number of wells in sensitive or vulnerable areas (optional) ⁽⁷⁾	Nitrate ≤ 5mg/l VOC, SOC, and Other parameters not detected ⁽⁸⁾	Number of wells in sensitive or vulnerable areas (optional) ⁽⁹⁾							
Untreated Water Quality Data from Private or Unregulated Wells (optional)		VOC											
		SOC ⁽¹⁵⁾											
		NO ₃											
		Other ⁽¹⁶⁾											
Other Sources (optional)		VOC											
		SOC ⁽¹⁵⁾											
		NO ₃											
		Other ⁽¹⁶⁾											

Major uses of the aquifer or hydrologic unit (optional) ⁽¹⁷⁾	___ Public water supply ___ Private water supply	___ Irrigation ___ Thermoelectric	___ Commercial ___ Livestock	___ Mining ___ Industrial	___ Baseflow ___ Maintenance
Uses affected by water quality problems (optional) ⁽¹⁷⁾	___ Public water supply ___ Private water supply	___ Irrigation ___ Thermoelectric	___ Commercial ___ Livestock	___ Mining ___ Industrial	___ Baseflow ___ Maintenance